

Course Outline

1. COURSE INFORMATION

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| Session Offered | Fall 2016 | |
| Course Name | Creativity, Innovation and Technology | |
| Course Code | GEN TECH 3DM3 | |
| Date(s) and Time(s) of lectures | Synchronous online sessions are Monday's 6:30pm - 9:30pm, from Sept. 6 – Dec. 6 | |
| Program Name | Civil Engineering Infrastructure Technology/Software Engineering Technology / Energy Engineering Technologies / Manufacturing Engineering Technology | |
| Calendar Description | This course is a blend of hands-on and theoretical treatment on the subject of creating new technological product and service value in our society. | |
| Instructor(s) | Name: Steve Tywonek | E-Mail: tywonek@avenue.cllmcmaster.ca Office Hours & Location: online via WebEX by appointment |

2. COURSE SPECIFICS

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| Course Description | <p>Pressures have increased significantly on all organizations to develop new: a) products/services, b) organization processes, and c) business models. Innovation starts with creativity, but requires extensive rational support for marketplace success. With this support, organizations can repeatedly create and capitalize-on opportunities to achieve their goals. In this course, we will explore:</p> <ul style="list-style-type: none"> • Creativity: how individuals and groups become more creative in their work effort & output and decision-making • Innovation: the supports (internal & external to the organization) required to enable an organization to be innovative • Decision-Making: the thinking and some tools to assist us in making the critical decisions in an innovation process <p>Learning is enabled through a combination of in-class/online discussion, group presentations, media articles, case analysis, independent/group research/study</p> | | |
| Instruction Type | Code | Type | Hours per term |
| | C | Classroom instruction | |
| | L | Laboratory, workshop or fieldwork | |
| | T | Tutorial | |
| | DE | Distance education | 39 |
| | Total Hours | | 39 |
| Resources | ISBN | Textbook Title & Edition | Author & Publisher |
| | 9781118538593 MUST be the e-book | 1) Managing Innovation: Integrating Technological, Market and Organizational | Joe Tidd and John Bessant Wiley&Sons. Available from the publisher as an e-book http://ca.wiley.com/WileyCDA/Wile |

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| | | Change, 5th Edition (2013) | yTitle/productCd-EHEP003053.html#purchase |
| | 9781605093017 For e-book 9781576754306 For paperback | 2) How to Get Ideas, 2nd Ed (2007) | Jack Foster Berrett-Koehler Publishers. Available from the publisher as an e-book http://www.bkconnection.com/books/title/how-to-get-ideas |
| | Other Supplies | A2L will contain electronic course material | |
| | Book Available | publisher website, amazon.ca | |
| Prerequisite(s) | Registration in Civil Engineering Infrastructure Technology, Energy Engineering Technologies, Manufacturing Engineering Technology or Software Engineering Technology | | |
| Corequisite(s) | N/A | | |
| Antirequisite(s) | N/A | | |
| Course Specific Policies | <ul style="list-style-type: none"> • Assignment/Testing requirements will be provided by the instructor. • Late penalty is 10% per calendar day, starting immediately. Other penalties are specified within each assignment. • Individual and Group work, peer evaluations, pre-class and post-class/homework, and facilitation & presentations by students are all mandatory aspects of this course • All presentations, and the debate, are treated the same as exams are. • Failure of an individual to fully participate in the group work and presentation will result in a significant mark reduction for that person, and can be reapportioned to remaining group members subject to sufficient notice. • Reports, Presentations, and Emails are all required to be business professional, computer generated, and utilising proper grammar & spelling. • WebEX, pre-recorded presentations, discussion boards and other technologies will be used during the delivery of this course; student preparation, along with full & complete participation, is expected in this course • This course will be using a range of software. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the B.Tech administration. • All assignments submitted for evaluation are completely software processed. Assignments and projects come as e-files in the format specified in the assignment. • Presentations are done in MSPowerpoint only. Presentations will be done online using WebEX. All students attend all group presentations. • Most work done in this course is done in groups as is typically the case in industry. All students participate in group work. No exceptions. Where group is indicated in this course, such group work is mandatory. | | |

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| | <ul style="list-style-type: none"> All groups are self chosen and size-limited as specified in the assignment in a group. Maximum presentation length is specified in the assignment. It is expected that students read the material that is coming under discussion prior to class consistent with the ‘flipped classroom’ approach to teaching/learning. Students are invited to actively participate during class sessions offering insight, comment, reinforcement, argument, contrary views and underscoring examples. Students are expected to participate in all discussions. Announcements made during synchronous sessions are considered to have been communicated to all students including those individuals that did not attend. Instructor is permitted to enforce a preference to have everyone shut off all non-session-related electronic devices and internet or other software windows during synchronous sessions. No accommodation will be made for students taking more than one course on the same evening. | |
| Departmental Policies | <p>Students must maintain a GPA of 3.5/12 to continue in the program. In order to achieve the required learning objectives, on average, B.Tech. students can expect to do at least 3 hours of “out-of-class” work for every scheduled hour in class. “Out-of-class” work includes reading, research, assignments and preparation for tests and examinations.</p> <p>Where group work is indicated in the course outline, such collaborative work is mandatory.</p> <p>The use of cell phones, iPods, laptops and other personal electronic devices are prohibited from the classroom during the class time, unless the instructor makes an explicit exception.</p> <p>Announcements made in class or placed on Avenue are considered to have been communicated to all students including those individuals that are not in class.</p> <p>Instructor has the right to submit work to software to identify plagiarism.</p> | |
| 3. SUB TOPIC(S) | | |
| Week 1 | <p>Introduction to Innovation</p> <ul style="list-style-type: none"> What is it? Why does it matter? <p>Note: MI=Managing Innovation textbook, HG=How to Get Ideas</p> | <p>MI-Chapter 1</p> <p>HG–Preface, Introduction</p> |
| Week 2 | <p>Innovation Process</p> <ul style="list-style-type: none"> Models Measuring | <p>MI-Chapter 2</p> <p>HG-Chapters 1, 2</p> |
| Week 3 | <p>Innovative Organizations</p> <ul style="list-style-type: none"> Systems framework Culture and Policies | <p>MI-Chapter 3</p> <p>HG- Chapters 3</p> |
| Week 4 | Assignment #1 presentations | <p>MI – none</p> <p>HG- Chapters 4, 5</p> |
| <i>Mid-term recess (Monday, October 10 to Sunday, October 16)</i> | | |
| Week 5 | <p>Innovation Strategy</p> <ul style="list-style-type: none"> Benefits Competencies | <p>MI-Chapter 4</p> <p>HG- Chapters 6</p> |
| Week 6 | <p>Finding Ideas</p> <ul style="list-style-type: none"> Sources of innovation Networked innovation | <p>MI-Chapters 5, 6.3, 6.6, 6.8</p> <p>HG- Chapters 7, 8</p> |
| Week 7 | Assignment #2 presentations | <p>MI – none</p> <p>HG- Chapters 9</p> |

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| Week 8 | Selecting Ideas <ul style="list-style-type: none"> Dealing with uncertainty Portfolio management | MI-Chapter 7 HG- Chapters 10 |
| Week 9 | Decision Making <ul style="list-style-type: none"> Business case Markets and cash flows | MI-Chapter 8 HG- Chapters 11 |
| Week 10 | New Product/Service Development ; Assignment #3 due <ul style="list-style-type: none"> Stage-Gate Model Services development | MI-Chapter 9 HG-Chapters 12, 13 |
| Week 11 | Exploiting Open Innovation and Alliances, and Creating New Ventures <ul style="list-style-type: none"> Collaboration across Organizations Corporate venturing | MI-Chapters 10, 11 HG-Chapters 14, 15 |
| Week 12 | Creativity & Innovation Debate | |

Classes end: Wednesday, December 7, 2016

Final examination period: Friday, December 9 to Thursday, December 22, 2016

All examinations MUST BE written during the scheduled examination period.

Note that this structure represents a plan and is subject to adjustment term by term.

The instructor and the University reserve the right to modify elements of the course during the term. The University may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes.

| 4. ASSESSMENT OF LEARNING *including dates* | Weight |
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| Assignment 1 (due Oct.3) – Select, investigate, analyze, and reach conclusions regarding the innovative ‘nature’ of a product/service. Report and/or presentation. | 20% |
| Assignment 2 (due Oct.31) – Select, investigate, analyze and reach conclusions regarding the innovative ‘nature’ of an organization. Report and/or presentation. | 20% |
| Assignment 3 (due Nov.21) – Create/Identify, analyse, propose and defend solutions/decisions relevant to innovation. Report and/or presentation. | 15% |
| Debate (due Dec.5) – Select, investigate, develop and justify your opinions regarding the creative/innovative ‘nature’ of several inventors. Report and/or presentation. | 15% |
| Individual Quizzes (weekly) – evaluation of students content learning | 20% |
| Preparation and Participation – evaluation of a students’ class preparation, in-class and online activities, and peer evaluations. | 10% |
| TOTAL | 100% |

Percentage grades will be converted to letter grades and grade points per the University calendar.

5. LEARNING OUTCOMES

- Discuss the importance of each element in an innovation framework and the requirements to foster innovation.
- Demonstrate the application of individual and group creativity tools and techniques.
- Evaluate the innovative nature of products, services, business processes and models.
- Analyze the innovative nature of organizations.
- Demonstrate the appropriate use of selected decision structuring methods.
- Propose appropriate decisions/conclusions to limited case studies and assignments, and effectively communicate the justification through group/individual reports/presentations/discussions.
- Explain the importance of creativity, process, stakeholders, change and communication management, in the innovation and decision making processes.
- Demonstrate effective communication (written and oral) skills using a selection of formats and software.

6. POLICIES

Anti-Discrimination

The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the

Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.

http://www.mcmaster.ca/policy/General/HR/Discrimination_Harassment_Sexual_Harassment-Prevention&Response.pdf

Academic Integrity

You are required to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, located at: <http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf>.

The following illustrates only three forms of academic dishonesty:

1. Plagiarism. E.g. the submission of work that is not own or for which other credit has been obtained
2. Improper collaboration in group work
3. Copying or using unauthorized aids in tests and examinations.

Requests for Relief for Missed Academic Term Work (Assignments, Mid-Terms, etc.)

The McMaster Student Absence Form is a self-reporting tool for **Undergraduate Students** to report absences DUE TO MINOR MEDICAL SITUATIONS that last up to 3 days and provides the ability to request accommodation for any missed academic work. Please note, this tool cannot be used during any final examination period.

You may submit a maximum of 1 Academic Work Missed requests per term. It is YOUR responsibility to follow up with your Instructor immediately (NORMALLY WITHIN TWO WORKING DAYS) regarding the nature of the accommodation.

If you are absent for reasons other than medical reasons, for more than 3 days or exceed 1 request per term you MUST visit your Associate Dean's Office (Faculty Office). You may be required to provide supporting documentation.

This form should be filled out immediately when you are about to return to class after your absence. <http://www.mcmaster.ca/msaf/>

E-Learning Policy

Consistent with the Bachelor of Technology's policy to utilize e-learning as a complement to traditional classroom instruction, students are expected to obtain appropriate passwords and accounts to access Avenue To Learn for this course. Materials will be posted by class for student download. It is expected that students will avail themselves of these materials prior to class. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail account, and program affiliation may become apparent to all other students in the course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about this disclosure please discuss this with the course instructor. Avenue can be accessed via <http://avenue.mcmaster.ca>.

Communications

It is the student's responsibility to:

- Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- Use the University provided e-mail address or maintain a valid forwarding e-mail address.
- Regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the

student's @mcmaster.ca alias.

- Check the McMaster/Avenue email and course websites on a regular basis during the term.

Turnitin (Optional)

This course will be using a web-based service (Turnitin.com) to reveal plagiarism. Students submit their assignment/work electronically to Turnitin.com where it is checked against the internet, published works and Turnitin's database for similar or identical work. If Turnitin finds similar or identical work that has not been properly cited, a report is sent to the instructor showing the student's work and the original source. The instructor reviews what Turnitin has found and then determines if he/she thinks there is a problem with the work. Students who do not wish to submit their work to Turnitin.com must still submit a copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, etc.). To see the Turnitin.com Policy, please go to <http://www.mcmaster.ca/academicintegrity/turnitin/students/>

Protection of Privacy Act (FIPPA)

The Freedom of Information and Protection of Privacy Act (FIPPA) applies to universities. Instructors should take care to protect student names, student numbers, grades and all other personal information at all times. For example, the submission and return of assignments and posting of grades must be done in a manner that ensures confidentiality.

<http://www.mcmaster.ca/univsec/fippa/fippa.cfm>

Academic Accommodation of Students with Disabilities Policy

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information consult McMaster's policy for Academic Accommodation of Students with Disabilities

<http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf>

Students must forward a copy of the SAS accommodation to the instructor of each course and to the Program Administrator of the B.Tech. Program immediately upon receipt. If a student with a disability chooses NOT to take advantage of a SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. <http://sas.mcmaster.ca>

Student Code of Conduct

The Student Code of Conduct (SCC) exists to promote the safety and security of all the students in the McMaster community and to encourage respect for others, their property and the laws of the land. McMaster University is a community which values mutual respect for the rights, responsibilities, dignity and well-being of others. The purpose of the Student Code of Conduct is to outline accepted standards of behavior that are harmonious with the goals and the well-being of the University community, and to define the procedures to be followed when students fail to meet the accepted standards of behavior. All students have the responsibility to familiarize themselves with the University regulations and the conduct expected of them while studying at McMaster University.

<http://judicialaffairs.mcmaster.ca/pdf/SCC.pdf> and <http://www.mcmaster.ca/policy/Students-AcademicStudies/StudentCode.pdf>